Attorney's Docket No.: 10848-017001 / 412018GA-rp

Applicant: Wolf Bertling et al.

Serial No.: 10/048,035 Filed: January 22, 2002

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In the Claims:

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Please amend claims 1 and 27. Please cancel claim 28. The claims and their status are shown below.

1. (Currently Amended) A method for labeling and identifying solid, liquid and gaseous substances (S1-n), comprising the steps of:

selecting at least one nucleic acid molecule from a first group of predefined nucleic acid molecules (N1-n), wherein each of the predefined nucleic acid molecules comprises an identification sequence section (IDS1-n),

contacting the substance (S1-n) with at least one predefined nucleic acid molecule (N1-n), thereby labeling the substance (S1-n),

providing a second group of nucleic acid molecules (N'1-n), wherein each nucleic acid molecule of the second group of nucleic acid molecules comprises a detection sequence section (IDP1-n) complementary to one of the identification sequence sections (IDS1-n),

contacting the <u>nucleic acid molecule(s) (N1-n)</u> selected from the first group substance (S1-n) with the nucleic acid molecules (N'1-n) provided from the second group under predefined hybridization conditions; and

detecting <u>whether or not</u> hybridization <u>occurs</u>, <u>wherein whether or not</u> <u>hybridization occurs identifies the substance (S1-n)</u>.

- 2. (Previously presented) The method as claimed in claim 1, wherein the identification sequence section (IDS1-n) is located between two primer binding sequence sections (PBS1, PBS2).
- 3. (Previously presented) The method as claimed in claim 2, wherein said identification sequence section (IDS1-n) comprises two identification sequence sections (IDS-A, IDS-B).
- 4. (Previously presented) The method as claimed in claim 3, wherein the identification sequence sections (IDS-A, IDS-B) are complementary to one another.
- 5. (Previously presented) The method as claimed in claim 2, wherein the primer binding sequence sections (PBS1, PBS2) have the same melting point.
- 6. (Previously presented) The method as claimed in claim 1, wherein the nucleic acid molecules (N1-n) are amplified.

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7. (Previously presented) The method as claimed in claim 1, wherein the predefined nucleic acid molecules (N1-n) are linked on at least one end to an agent which counteracts degradation caused by exonuclease.

- 8. (Previously presented) The method as claimed in claim 1, wherein the predefined nucleic acid molecule (N1-n) is provided with a coupling group (A, B, C, D-Z).
- 9. (Previously presented) The method as claimed in claim 8, wherein the coupling group (A, B, C, D-Z) is selected from the group consisting of: a biotin group, an amino group, a thiol group, and a hapten.
- 10. (Previously presented) The method as claimed in claim 1, wherein a molecule carrying a fluorophoric group (F11-n) is bound to the predefined nucleic acid molecule (N1-n).
- 11. (Previously presented) The method as claimed in claim 8, wherein the coupling group (A, B, C, D-Z) is labeled with a fluorophoric group.
- 12. (Previously presented) The method as claimed in claim 1 wherein the predefined nucleic acid molecules (N1-n) are bound to the substance (S1-n) and wherein the substance (S1-n) is selected from the group consisting of antibodies, lectins, receptors, nucleotide sequences, PNA sequences, peptides, proteins, sugars, and ligands.
- 13. (Previously presented) The method as claimed in claim1, wherein the predefined nucleic acid molecules (N1-n) are bound to particles (P) or are included therein.
- 14. (Previously presented) The method as claimed in claim 13, wherein the particles (P) are from 30 nm to 3 mm in size.
- 15. (Previously presented) The method as claimed in claim 13, wherein the particles (P) are silica, polystyrene, polyvinyl chloride, polyethylene, nylon or glass milk particles.
- 16. (Previously presented) The method as claimed in claim 13, wherein the particles (P) are selected from the group consisting of a viral capsid and a virus-like particle.
- 17. (Previously presented) The method as claimed in claim 1, wherein each of the second group of nucleic acid molecules (N'1-n) is bound to a predefined site on a solid surface.
- 18. (Previously presented) The method as claimed in claim 1, wherein hybridization of an identification sequence section (IDS1-n) with a complementary detection sequence section (IDP1-n) is detected by means of fluorescence.
- 19. (Previously presented) The method as claimed in claim 1, wherein at least two predefined nucleic acid molecules (N1-n) are added to the substance (S1-n) as a label.

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20. (Previously presented) The method as claimed in claim 1, wherein the predefined nucleic acid molecules (N1-n) and/or the second group of nucleic acid molecules (N'1-n) are prepared synthetically.

- 21. (Previously presented) The method as claimed in claim 1, wherein the first group of predefined nucleic acid molecules (N1-n) and the second group of nucleic acid molecules (N'1-n) comprise nucleic acid analogs.
- 22. (Original) The method as claimed in claim 21, wherein the nucleic acid analogs are selected from the group consisting of PTO and PNA.
- 23. (Original) The method of claim 17, wherein the solid surface is selected from the group consisting of a chip, a microtiter plate, and film.
 - 24. (Original) The method of claim 6, wherein said amplification is by PCR.
- 25. (Original) The method of claim 24, wherein said PCR uses fluorescently-labelled primers.
- 26. (Original) The method of claim 3, wherein said identification sequence sections (IDS-A, IDS-B) comprise primer binding sequence sections (PBS1, PBS2).
- 27. (Currently Amended) A method for identifying solid, liquid and gaseous substances (S1-n), said substance having been labeled with at least one nucleic acid molecule selected from a first group of predefined nucleic acid molecules (N1-n), wherein each of the predefined nucleic acid molecules comprises an identification sequence section (IDS1-n), comprising the steps of:

providing a second group of nucleic acid molecules (N'1-n), wherein each of the nucleic acid molecules of the second group of nucleic acid molecules comprises a detection sequence section (IDP1-n) complementary to one of the identification sequence sections (IDS1-n),

contacting the <u>nucleic acid molecule(s) (N1-n)</u> selected from the first group substance (S1-n) with the nucleic acid molecules (N'1-n) provided from the second group under predefined hybridization conditions; and

detecting <u>whether or not</u> hybridization <u>occurs</u>, <u>wherein whether or not</u> hybridization occurs identifies the substance (S1-n).

28. (Canceled)